OFFICE OF
MANAGING DIRECTOR

86-285

Joseph A. Godles, Esquire
Goldberg, Godles, Weiner and Wright
1229 19th Street, NW
Washington, DC 20036

RE: Request for Waiver and Refund of Filing Fees,
PanAmSat Corporation Application for PAS-8B Satellite,
Fee Control No. 98103082210288001

Dear Mr. Godles:

This responds to the above-styled request of October 29, 1998 requesting a waiver and refund of the application fee of $89,460 paid with PanAmSat Corporation's application to launch and operate the satellite known as PAS-8B.

PanAmSat requests a waiver and refund on the ground that PAS-8B replaces PAS-8 by covering the same areas and use the same frequency bands as PAS-8. Because PAS-8B is comparable "in all material respects with [the authorization] already granted . . . for PAS-8 . . . [the Commission would expend] minimal regulatory review . . . ."

The Commission does not find these general conclusions instructive in meeting PanAmSat's burden of "good cause is shown and where waiver or deferral of the fee would promote the public interest." 47 CFR §1.1117(a). Even construing the application as part of the request for waiver is insufficient in demonstrating the required good cause *and* that a waiver of the fee would promote the public interest.

Accordingly, the Commission denies PanAmSat's request for waiver and refund of filing fees. If you have any questions, please contact the Credit & Debt Management Group at (202) 418-1995.

Sincerely,

Mark A. Reger
Chief Financial Officer

9810308 2102 8800 1

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of the Application of)
)
PANAMSAT LICENSEE CORP.) File No.
)
For Authority To Launch and Operate)
A Replacement Fixed-Satellite)
Service Space Station)

REQUEST FOR WAIVER AND REFUND OF FILING FEES

PanAmSat Licensee Corp. ("PanAmSat"), pursuant to Section 8(d)(2) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 158(d)(2), and Sections 1.1113 and 1.1117 of the Commission's rules, hereby requests that the Commission waive and refund the filing fee for the attached application for authority to construct, launch, and operate a replacement satellite.

Under the Commission's rules, the Commission may waive filing fees "where good cause is shown and where waiver ... of the fees would promote the public interest."[1] Any fee so waived should be returned or refunded to the applicant.[2]

The attached application seeks authority to launch and operate a Ku-band fixed-satellite service ("FSS") satellite, to be known as PAS-8B, to replace PanAmSat's PAS-8 satellite. Since the launch of PAS-8 in late 1997, it has become apparent that PAS-8 lacks full payload capability due to losses suffered in its power generating system. PanAmSat proposes to launch and operate PAS-8B as a replacement for PAS-8.

PAS-8B will have the same technical characteristics as PAS-8. It will cover the same areas in Latin America as PAS-8 and use the same frequency bands as PAS-8 operating at the same EIRPs. In short, the authorization now being requested by PanAmSat for PAS-8B is comparable in all material respects with that already granted by the Commission to PanAmSat for PAS-8.

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[1] 47 C.F.R. § 1.1117(a).

[2] 47 C.F.R. § 1.1113(a)(5).

As a result, the Commission will be required to engage in minimal regulatory review of the attached application. Since the Commission already has passed on the various technical and operational aspects of PAS-8, and since the attached application raises no new policy issue, the "fees contained in the fee schedule bear scant relationship to the resources required to process the replacement satellite's authorizations."[3] Accordingly, PanAmSat requests refund and waiver of the filing fee submitted in connection with the attached application for authority to construct, launch, and operate the PAS-8B replacement satellite.[4]

<div style="text-align:right">

Respectfully submitted,

PANAMSAT LICENSEE CORP.

By:___/s/ Joseph A. Godles____
Joseph A. Godles

GOLDBERG, GODLES, WIENER
& WRIGHT
1229 19th Street, NW
Washington, D.C. 20036
(202) 429-4900

Its Attorneys

</div>

October 29, 1998

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[3] See Fee Decisions of the Managing Director, 9 FCC Rcd 2223, 2230-31 (1994) (granting partial fee waiver for application to construct, launch, and operate replacement satellite).

[4] Under similar circumstances, the Commission refunded to PanAmSat $74,620 of an $80,360 fee paid in connection with an application for authority to construct, launch, and operate the PAS-2R replacement satellite. See Letter from Marilyn J. McDermett, FCC Associate Managing Director, to Joseph A. Godles, Attorney for PanAmSat (Feb. 24, 1997).

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of the Application of)
)
PANAMSAT LICENSEE CORP.) File No.
)
For Authority To Launch and Operate)
A Replacement Fixed-Satellite)
Service Space Station)

APPLICATION

James W. Cuminale
Senior Vice President,
  General Counsel and Secretary
PANAMSAT LICENSEE CORP.
One Pickwick Plaza
Greenwich, CT
(203) 622-6664

Of Counsel:

Joseph A. Godles, Esq.
Goldberg, Godles, Wiener & Wright
1229 19th Street, N.W.
Washington, D.C. 20036
(202) 429-4900

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of the Application of   )
)
PANAMSAT LICENSEE CORP.   )   File No.
)
For Authority To Launch and Operate   )
A Replacement Fixed-Satellite   )
Service Space Station   )

APPLICATION

PanAmSat Licensee Corp. ("PanAmSat"), hereby requests authority to launch and operate a replacement Ku-band fixed-satellite service ("FSS") satellite, to be known as PAS-8B, to replace PanAmSat's PAS-8 satellite, which lacks full payload capability due to losses suffered in its power generating system. PanAmSat proposes to locate PAS-8B at 43° W.L., which is the orbital location currently occupied by PAS-8.

Significantly, because PAS-8B will be providing service from the orbital location currently occupied by PAS-8, PanAmSat is not herein seeking the assignment of an additional orbital location, nor will grant of PanAmSat's Application increase congestion in the satellite arc. For that reason, and as the Commission already determined in granting PanAmSat's application for PAS-8,[1] the Commission's "freeze" on satellite applications seeking assignments between 60° W.L. and 30° W.L. is inapplicable to this Application. In accordance with the Commission's policies, moreover, PanAmSat respectfully requests that its application for a replacement satellite be processed outside of the context of a processing round.[2]

INTRODUCTION

PanAmSat operates the PanAmSat and Galaxy satellite systems, which are comprised of seventeen commercial communications satellites spanning the globe. Using these satellites, PanAmSat and its predecessors have provided a wide variety of reliable satellite services for many years. PanAmSat's satellites provide the means for commercial

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[1] See In the Matter of PanAmSat Licensee Corp., DA 96-2124 (Dec. 17, 1996).

[2] See, e.g., In the matter of Loral Spacecom Corp., Order and Authorization, File No. 58-SAT-LA-97 (rel. May 15, 1998); In the Matter of GE American Communications, 10 FCC Rcd 13775, 13776 (1995).

television and radio distribution, teleconferencing, video backhaul, high speed image transmission, and private data networks, among other services. Countless end users across the world rely on these services every day.

PAS-8 was intended to be an integral part of PanAmSat's global satellite network. Since its launch in late 1997, however, it has become apparent that losses suffered in its power generating system have severely reduced the payload capacity aboard PAS-8. For that reason, PanAmSat is herein requesting authority to construct, launch, and operate a replacement satellite, to be known as PAS-8B, from the same orbital location.

In support of this Application, PanAmSat submits the following information:

Item A.   Name, Address, and Telephone Number of Applicant

PanAmSat Corporation
One Pickwick Plaza
Greenwich, CT
(203) 622-6664

Item B.   Correspondence

Inquiries or correspondence with respect to this application should be sent to the following person at the above address and telephone number:

James W. Cuminale
Senior Vice President, General Counsel and Secretary

With a copy to:

Joseph A. Godles, Esq.
Goldberg, Godles, Wiener And Wright
1229 19th Street, N.W.
Washington, D.C. 20036
(202) 429-4900

Item C.   System Description

See attached Engineering Statement.

Item D.   General Technical Information

See attached Engineering Statement.

Item E.   Financial Qualifications

Exhibit 2 and the attached full financial showing demonstrate that PanAmSat has the current financial ability to meet the estimated costs of constructing PAS-8B, launching the satellite, and operating it for one year.

Item F.   Legal Qualifications

The portions of the application appearing on FCC Form 312 establish PanAmSat's legal qualifications, which are a matter of public record. See also Hughes Communications, Inc. et al., File Nos. 2-SAT-AL-97(11) et. al.

Item G.   Type of Operations

PanAmSat proposes to market all of the transponders on PAS-8B on a non-common carrier basis, pursuant to the Commission's decisions in Domestic Fixed-Satellite Transponder Sales, 90 F.C.C.2d 1238 (1982), and Martin Marietta Communications Systems, Inc., 60 R.R.2d 779 (1986). PanAmSat will retain the flexibility to market transponders to common carriers and resellers. Thus, although common carrier services may be offered using its transponders, they will not be offered by the applicant, PanAmSat.

Item H.   Public Interest Considerations

Grant of this Application will enable PanAmSat to continue to provide service to customers that have come to rely on satellite facilities aboard the PAS-8 space station, and to expand those services. Grant of this Application, therefore, will avoid unnecessary expense and disruption for current customers and expand the competitive choices available in the marketplace.

WAIVERS/CERTIFICATIONS

PanAmSat waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise, and requests construction and launch and operating authority in accordance with this Application. All statements

made in the attached exhibits are a material part hereof, and are incorporated herein as if set out in full in this Application.

The undersigned certifies individually and for PanAmSat that the statements made in this Application are true, complete, and correct to the best of his knowledge and belief, and are made in good faith.

The undersigned also certifies that neither PanAmSat nor any party to this Application is subject to a denial of federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. § 853a.

CONCLUSION

For the foregoing reasons, PanAmSat respectfully requests that the Commission grant this Application.

Respectfully submitted,

PANAMSAT LICENSEE CORP.

By: _____
James W. Cuminale
Senior Vice President,
General Counsel and Secretary

Of Counsel:

Joseph A. Godles, Esq.
Goldberg, Godles, Wiener & Wright
1229 19th Street, N.W.
Washington, D.C. 20036

October 29, 1998

EXHIBIT 1

PAS-8B MILESTONES

EVENT	COMPLETION DATE
Spacecraft RFP issued	Completed
Spacecraft contractor selected	Completed
Spacecraft contract executed	Completed
Launch services contract executed	Completed
Spacecraft constructed	Completed
Spacecraft launched	December 15, 1998
Spacecraft in service	Within 60-90 days after launch

CERTIFICATION OF PERSON RESPONSIBLE

FOR PREPARING ENGINEERING

INFORMATION SUBMITTED IN THIS APPLICATION

I hereby certify that as PanAmSat's Chief Scientist, I am the technically qualified person responsible for preparation of the engineering information contained in this Application. I further certify that I am familiar with Part 25 of the Commission's Rules, that I have prepared the engineering information submitted in this Application, and that it is complete and accurate to the best of my knowledge. I am a registered Professional Engineer in Washington, D.C. and my seal is shown below.

By: _____

Philip A. Rubin

Chief Scientist

PanAmSat

Item D.   General Technical Information

Satellite Operational Characteristics

a.   Frequency Plan

The PAS-8B satellite will be constructed to operate entirely
in the Ku- frequency bands.   The radio frequency and polarization
plans are described in Figure 1 and Table 1.   PAS-8B's Ku-Band
payload will consist of 32 active transponders, each with a
bandwidth of 36 MHz. The PAS-8B satellite is intended to replace
the PAS-8 satellite which is also located in the same orbit slot.
The PAS-8 satellite is being replaced because it lacks full
payload capability due to losses suffered in its power generating
system.

It should be noted that PAS-8B will cover the same areas in
Latin America as PAS-8 and use the same frequency bands as used
on PAS-8 at the same EIRP's.   Thus the technical characteristics
of the two satellites will be the same.

In addition to the communications channel frequencies, two
Ku-Band command uplinks and two Ku-Band telemetry downlinks are
planned.   During transfer orbit, command signals will be received
through an omni-directional antenna (bicone) at the band-edge of
the Ku-Band receive frequencies.   When the satellite is at its
final orbit position, the primary command uplink will be received

at the edge of the standard Ku-Band frequencies. This will occur
through the Ku-Band horn, with the bicone and pipe antennas
available as backups. The command uplink will not employ the
government approved command encryption. The two Ku-Band
telemetry frequencies shown in Figure 1 and Table 1 will allow
simultaneous transmission of two separate or redundant telemetry
data streams. The Ku-Band downlink beacon signals will be
continuously transmitted by the satellite and used by earth
station operators as a calibrated reference to compensate for
rain attenuation and to adjust antenna pointing.

The satellite communication subsystem will include
appropriate filtering at the inputs and outputs of the satellite
to minimize internal interchannel interference, noise effects
outside the satellite frequency band, and out-of-band spurious
transmissions.

Figure 1. Ku-Band Frequency Plan

36.00 MHz Channel Bandwidth
40.00 MHz Channel Spacing

UPLINK

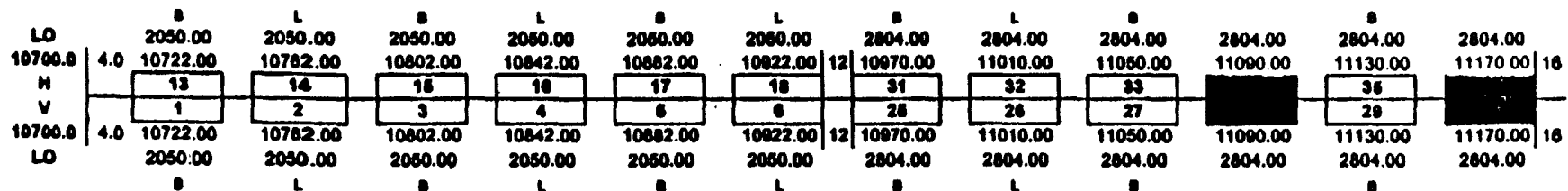| 12760.0	4.0	12772.00	12812.00	12852.00	12892.00	12932.00	12972.00	14	13022.00	13062.00	13102.00	13142.00	13182.00	13222.00	10.00	13260
H		1	2	3	4	5	6		7	8	9	10	11	12		
V		13	14	15	16	17	18		19	20	21	22	23	24		
12760.0	4.0	12772.00	12812.00	12852.00	12892.00	12932.00	12972.00	14	13022.00	13062.00	13102.00	13142.00	13182.00	13222.00	10.00	13260

OMNI (Transfer Orbit) CMD Freq: 13999.5 MHz Perpendicular to Z-Axis

Pipe(Backup) CMD Freq: 13751.5 MHz LHCP

BTA (On-station) CMD Freq: 13999.5 MHz HORZ

13750	6.00	13774.00	13814.00	13854.00	13894.00	13934.00	13974.00	6.00	14000
H		25	26	27	■	29	■		
V		31	32	33		35			
13750	6.00	13774.00	13814.00	13854.00	13894.00	13934.00	13974.00	6.00	14000

L=Latin America(downlink on West Reflector)
B=Brazil(downlink on East Reflector)
B/L=Switchable between Brazil and Latin America

DOWNLINK

LO		B 2050.00	L 2050.00	B 2050.00	L 2050.00	B 2050.00	L 2050.00	B 2804.00	L 2804.00	B 2804.00	2804.00	B 2804.00	2804.00	
10700.0	4.0	10722.00	10762.00	10802.00	10842.00	10882.00	10922.00	12	10970.00	11010.00	11050.00	11090.00	11130.00	11170.00	16
H		13	14	15	16	17	18		31	32	33	■	35	■	
V		1	2	3	4	5	6		25	26	27		29		
10700.0	4.0	10722.00	10762.00	10802.00	10842.00	10882.00	10922.00	12	10970.00	11010.00	11050.00	11090.00	11130.00	11170.00	16
LO		2050.00 B	2050.00 L	2050.00 B	2050.00 L	2050.00 B	2050.00 L	2804.00 B	2804.00 L	2804.00 B	2804.00	2804.00 B	2804.00	

TM 1: 11200.5 MHz Global Horn(On-station)=HORZ, Omni(Transfer Orbit)=Perpendicular to Z-Axis, Pipe(Backup)=LHCP
TM 2: 11201.0 MHz Global Horn(On-station)=HORZ, Omni(Transfer Orbit)=Perpendicular to Z-Axis, Pipe(Backup)=LHCP

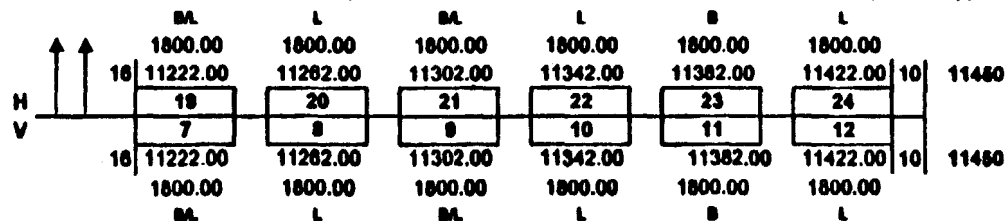|		B/L 1800.00	L 1800.00	B/L 1800.00	L 1800.00	B 1800.00	L 1800.00		
	16	11222.00	11262.00	11302.00	11342.00	11382.00	11422.00	10	11450
H		19	20	21	22	23	24		
V		7	8	9	10	11	12		
	16	11222.00	11262.00	11302.00	11342.00	11382.00	11422.00	10	11450
		1800.00 B/L	1800.00 L	1800.00 B/L	1800.00 L	1800.00 B	1800.00 L		

Table 1. Ku-Band Frequency Assignments

Channel/ function	Bandwidth, MHz	Uplink frequency, MHz	Pol	Downlink frequency, MHz	Pol
1	36	12772	H	10722	V
2	36	12812	H	10762	V
3	36	12852	H	10802	V
4	36	12892	H	10842	V
5	36	12932	H	10882	V
6	36	12972	H	10922	V
7	36	13022	H	11222	V
8	36	13062	H	11262	V
9	36	13102	H	11302	V
10	36	13142	H	11342	V
11	36	13182	H	11382	V
12	36	13222	H	11422	V
13	36	12772	V	10722	H
14	36	12812	V	10762	H
15	36	12852	V	10802	H
16	36	12892	V	10842	H
17	36	12932	V	10882	H
18	36	12972	V	10922	H
19	36	13022	V	11222	H
20	36	13062	V	11262	H
21	36	13102	V	11302	H
22	36	13142	V	11342	H
23	36	13182	V	11382	H
24	36	13222	V	11422	H
25	36	13774	H	10970	V
26	36	13814	H	11010	V
27	36	13854	H	11050	V
28	36	-	-	-	-
29	36	13934	H	11130	V
30	36	-	-	-	-
31	36	13774	V	10970	H
32	36	13814	V	11010	H
33	36	13854	V	11050	H
34	36	-	-	-	-
35	36	13934	V	11130	H
36	36	-	-	-	-
CMD On station	-	13999.5	H	-	-
CMD Transfer Orbit bicone	-	13999.5	Perp. to +z axis	-	-
CMD pipe	-	13751.5	LHCP	-	-
TM1 On station	-	-	-	11200.5	H
TM2 On station	-	-	-	11201.0	H
TM1 Transfer Orbit bicone	-	-	-	11200.5	Perp. to +z axis
TM2 Transfer Orbit bicone	-	-	-	11201.0	Perp. to +z axis
TM1 pipe	-	-	-	11200.5	LHCP
TM2 pipe	-	-	-	11201.0	LHCP

b.   Emission Designators

Commands to the satellite from the TT&C station will be angle-modulated with a large deviation on the uplink carrier. The satellite will be equipped with government-approved command encryption equipment in order to secure command transmissions. Telemetry data from the satellite will be angle-modulated on the downlink carrier. The emission designators for the communications, TT&C, and downlink beacon signals are as follows:

Table 2. Emissions Designators

Signal	Emission Designator
Command	300KF9DXX
Telemetry/Ranging	120KF9DXX
Single carrier TV	36M0G7W

Communications Coverage

The PAS-8B receive/transmit patterns are depicted in Figures 2 through 4. As shown, coverage is provided over North America, Central and South America and Europe on the uplink, and South America on the two downlink beams.
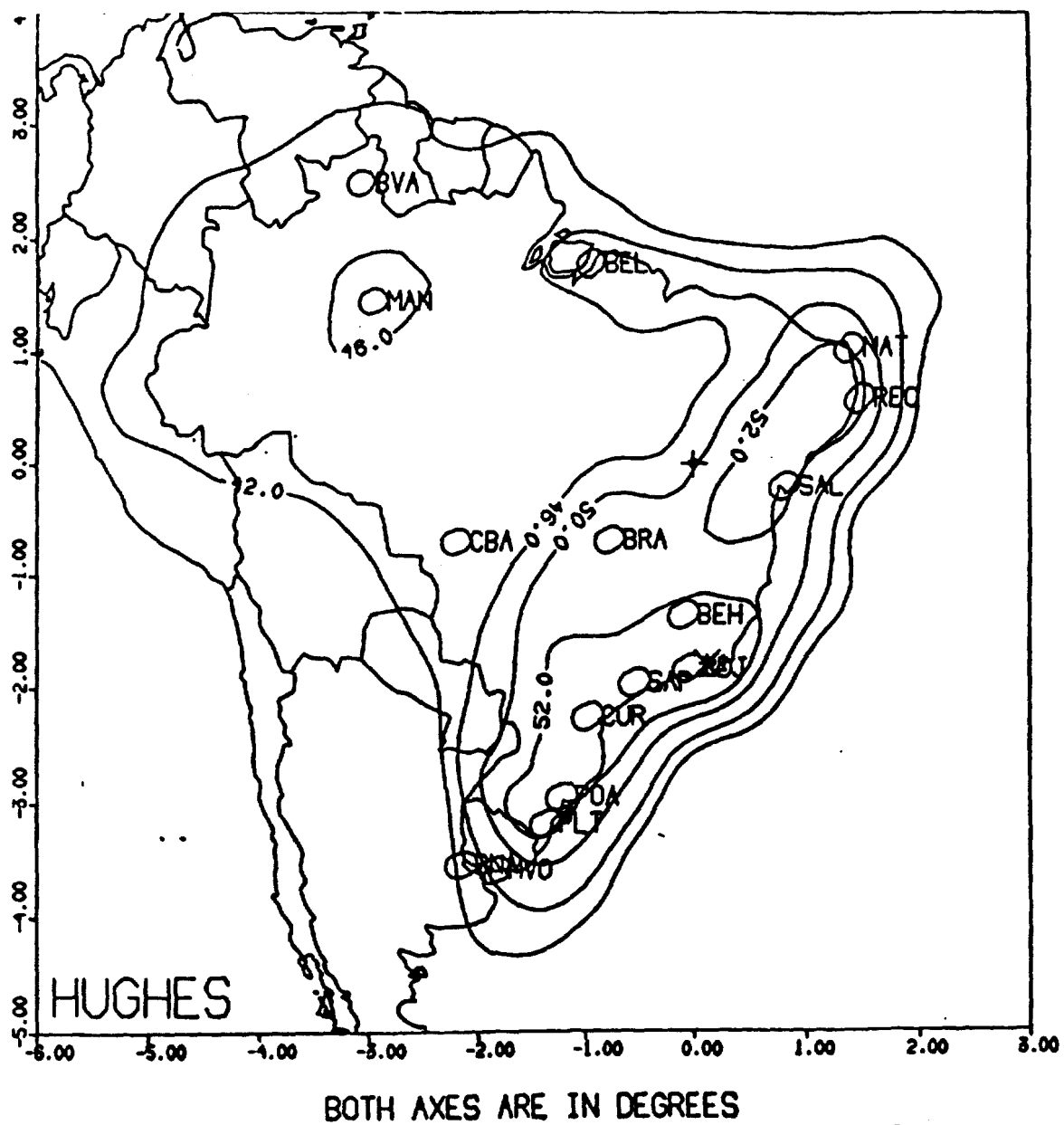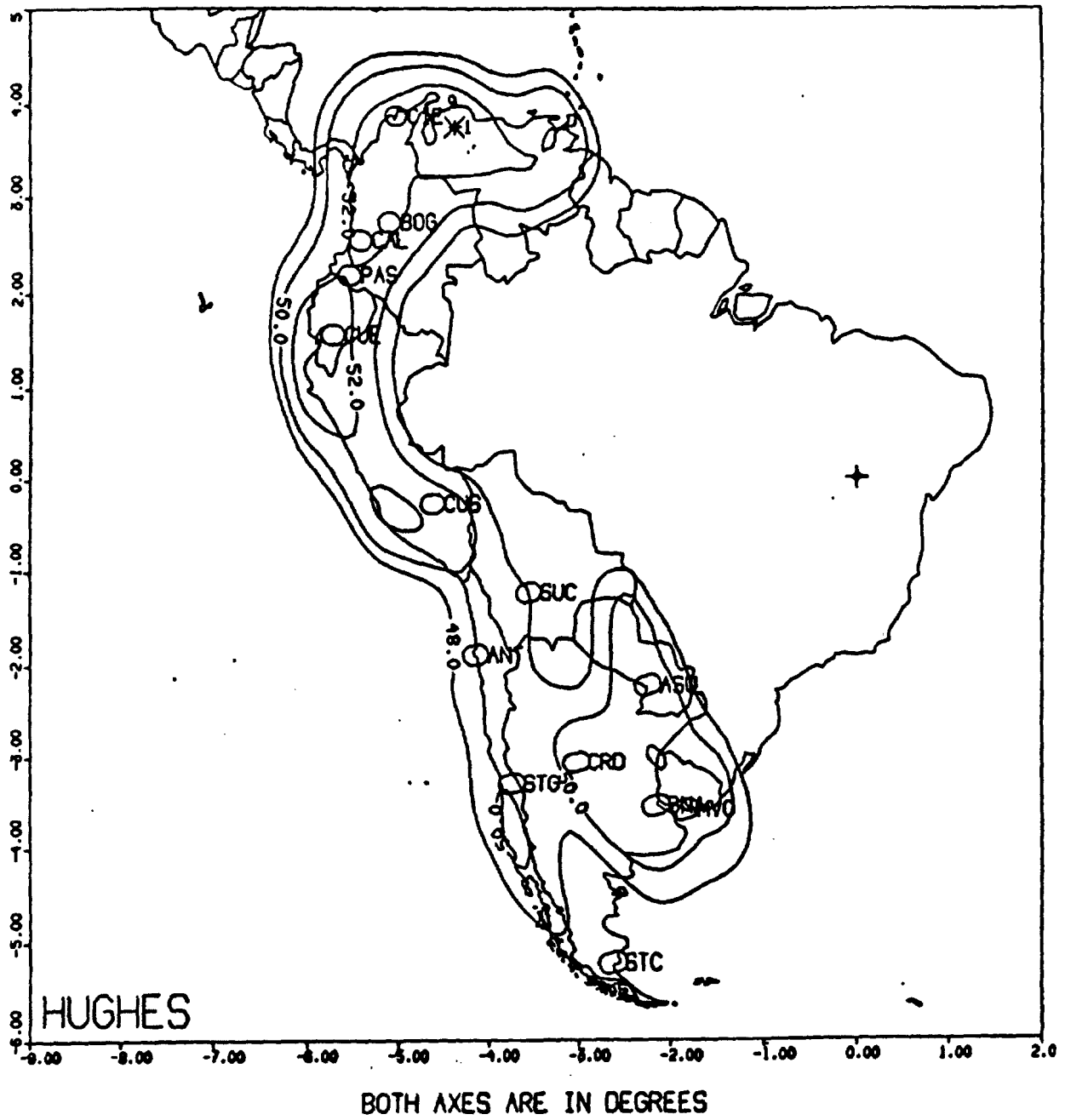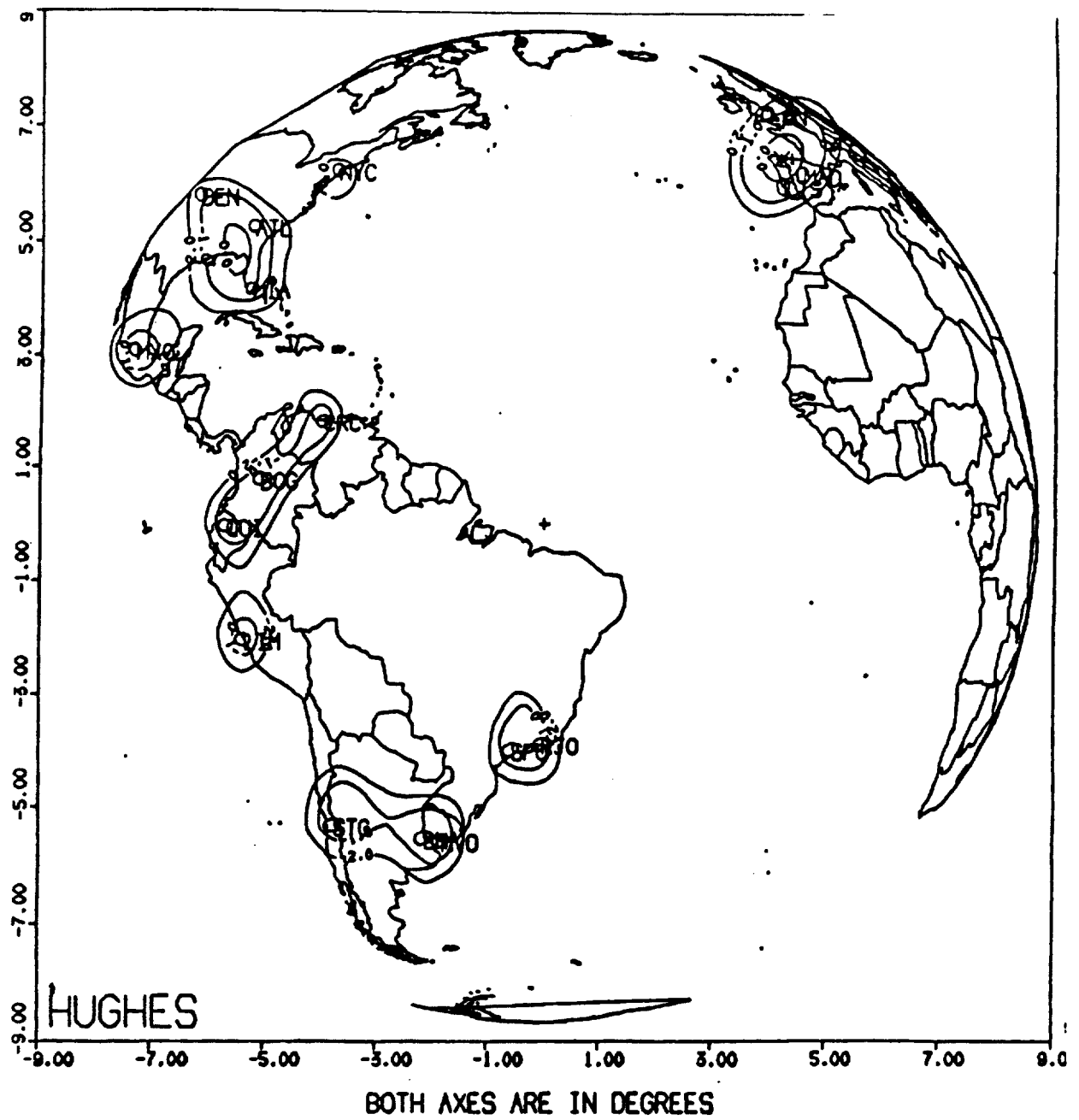
Figure 2. Brazil Downlink Beam

BOTH AXES ARE IN DEGREES

Figure 3. Latin Downlink Beam

BOTH AXES ARE IN DEGREES

Figure 4. Uplink US/South America/Europe Beam

BOTH AXES ARE IN DEGREES

d.   Power Flux Density Level

The power flux density limits for space stations are specified in Section 25.208 of the FCC Rules. Using the contours in Figures 2 and 3 it will be shown that the PAS-8B satellite will meet the Commission's regulations.

For the Brazil Beam:

Maximum EIRP in Beam (dBW)	53.2
Path Loss to beam boresite (dB)	-205.5
Gain of $1m^2$ Antenna (dB)	42.5
Bandwidth of Digital TV Carrier (dB)	-75.6
Conversion to 4kHz (dB)	36.0
Maximum Power Flux Density (dBW/m^2/4kHz)	-149.4

For the Latin Beam:

Maximum EIRP in beam (dBW)	52.3
Path Loss to beam boresite (dB)	-205.5
Gain of $1m^2$ Antenna (dB)	42.5
Bandwidth of Digital TV Carrier (dB)	-75.6
Conversion to 4kHz (dB)	36.0
Maximum Power Flux Density (dBW/m^2/4kHz)	-150.3

The results of these calculations clearly show that neither of the two PAS-8B beams exceed the flux density limitations employed by the Commission and ITU.

2. Satellite characteristics

The major characteristics of the spacecraft are shown below in Tables 2 and 3. The estimated weight and power budgets, listed in Tables 4 and 5, are based on a mission life of 15 years and assume sufficient redundancy to allow for random failures.

Table 2. Spacecraft Characteristics

General

spacecraft bus	Hughes, HS-601 HP
stabilization	3 axis, momentum bias
mission life	15 years
eclipse capability	100 percent
stationkeeping	
north-south	±0.05°
east-west	±0.05°
antenna pointing	±0.1° n-s and e-w

Communications

frequency	
receive	13750 to 14000 MHz
	12750 to 13250 MHz
transmit	10700 to 11450 MHz
polarization	uplink: H and V linear
	downlink: H and V linear
number of transponders	32
transponder bandwidth	36 MHz
saturated flux density	-75dBW/m^2 @ 0dB G/T
adjustable by ground	
command in 1 dB steps	
transmitter RF power	
Brazil Beam	140W TWTA's at Ku-Band
Latin Beam	105W TWTA's at Ku-Band

transmitter redundancy   40 for 32 (Ku-Band)

Table 3. Spacecraft Characteristics (cont'd)

telemetry/ranging   vertical, linear

telemetry eirp
        transfer orbit   0.0 dBW bicone
                                          0.0 dBW pipe
        on station   0.0 dBW EOC

coverage
    command
        transfer orbit   bicone
        on station   pipe

frequency

        command, ranging   13999.5 MHz transfer orbit
                                          13999.5 MHz on station
                                          13751.5MHz backup

        telemetry, ranging   11200.5 MHz, 11201 MHz

polarization

    command

        transfer orbit   horizontal for bicone
                                          LHCP for pipe

        on station   horizontal for antenna
                                          horizontal for bicone
                                          LHCP for pipe
    Telemetry

        transfer orbit   horizontal, wide angle
        on-station   horizontal, global horn
                                          LHCP, for pipe

Table 3. Propellant Budget

Maneuver	Mission Phase	Propellant Used	
Apogee Burns	Transfer Orbit	1,351.4	
Reor/acq/iot/move	Drift Orbit		11.1
Stationkeeping	Geosynchronous	E/W – 21.3	
		N/S – 138.5	
Attitude Control	Geosynchronous	20.2	
De-Orbit	End-of-life	3.2	

Table 4. Mass Budget

Category	Weight, kgs.
communications subsystem mass	412
bus weight	1,441
total spacecraft dry mass	1,853
allowable dry mass – Ariane 4	1,925
margin	72

Table 5. Power Budget

Category	Power, watts
communications subsystem power	6,942
bus power	1,305
total power requirement	8,247
array capability(15 years)	8,593
end-of-life margin	346
array margin, %	4.2
battery depth of discharge	0.786

3.   Satellite Description


    a. General

    The on-orbit satellite configuration for PAS-8B is shown in
Figure 5.   The spacecraft bus is based upon the HSC HS-601 HP
series body-stabilized bus.   The satellite design is compatible
with launch by one of the currently available commercial launch
vehicles.   Final injection into geosynchronous orbit will be
accomplished by an on-board liquid apogee motor (LAM).   At
present it is planned to launch PAS-8B on an Ariane 4 vehicle.

    Deployment of antennas and solar wings takes place in
several separate operations.   Both a bicone antenna and a pipe
antenna will be used for command, telemetry, and ranging during
transfer orbit configuration.   After the spacecraft has been
injected into synchronous orbit, the communications antennas and
radiator panels are deployed and the solar wings are extended.
At this time, a global horn will be used for TT&C (the horn is
already in position to operate, i.e., no deployment necessary).

    b. Structural Design

    The spacecraft takes advantage of a modular design for ease
of manufacturing and integration.   Communications equipment is
mounted on the payload module that forms the forward portion of
the spacecraft. A bus module forms the aft portion of the
spacecraft.

Figure 5. On Orbit Configuration

WEST (-X)

NORTH (-Y)

SOUTH (+Y)

EAST (+X)

ENGINEERING REFERENCE
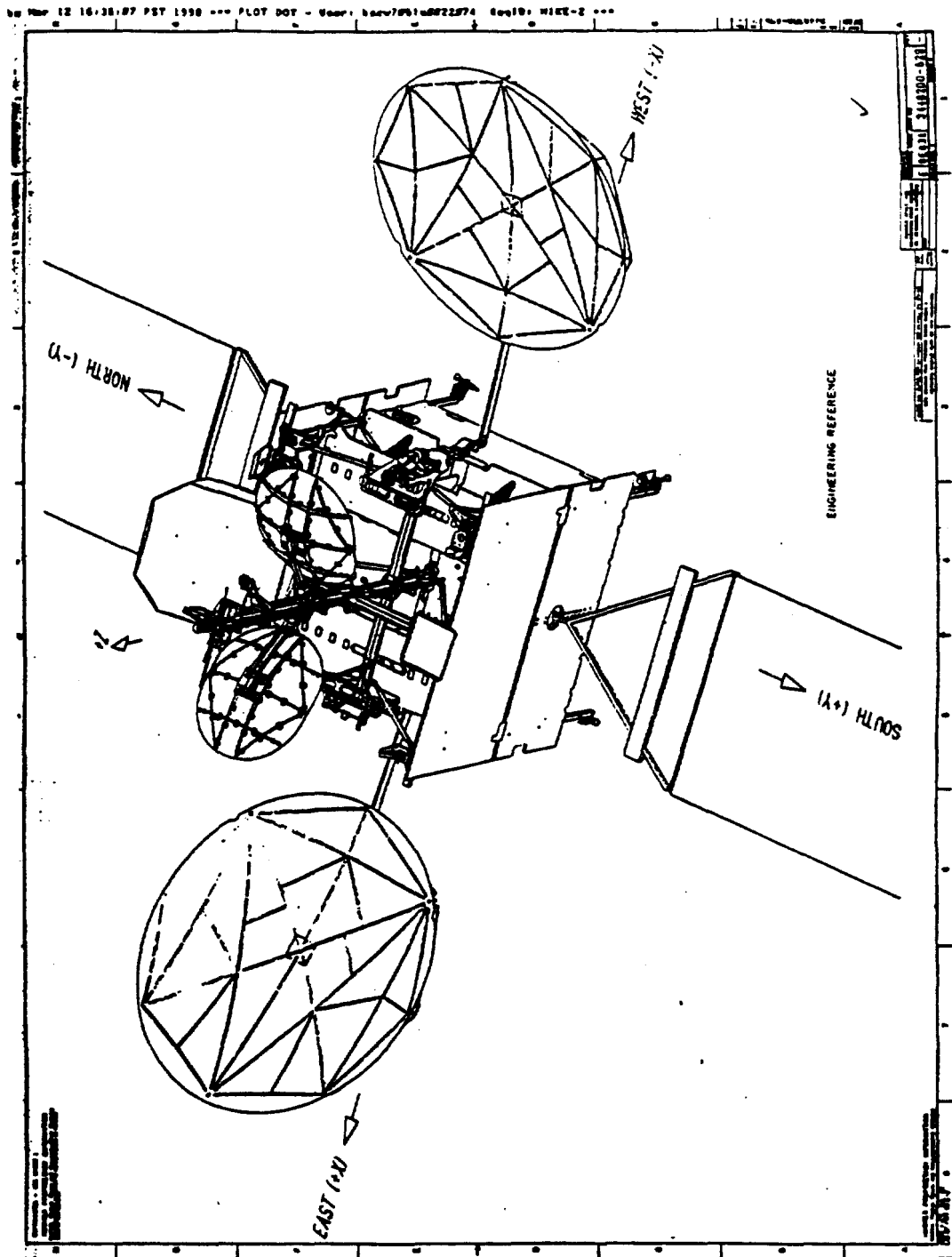
c.   Thermal Control

Thermal control is accomplished with a heat pipe network, a radiator design, doublers, heaters and temperature sensors. A new design includes the use of deployable radiators. Battery temperatures are maintained within limits by using direct radiating surfaces plus heaters.

d.   Power

Satellite power will be provided by a solar array of fused silica-covered gallium arsenide solar cells that convert solar energy to the required electrical power. The four panel solar wings are deployed after the satellite attains synchronous orbit. Nickel-Hydrogen batteries provide sufficient electrical power during eclipse to operate the full communications and housekeeping loads. The electrical power subsystem has been designed so that no single failure in the subsystem will cause a spacecraft failure. Sufficient power will be available at the end of the satellite's life to support all 32 active transponder channels and the housekeeping loads.

e.   Attitude Control

The Attitude Control Subsystem (ACS) maintains the spacecraft attitude during the transfer orbit, initial acquisition period, and geostationary operations. The ACS employs sun and earth sensors to perform all attitude

determination functions. Control of attitude and spacecraft
orbit is accomplished by using reaction wheels and by pulsed or
continuous firing of selected thrusters by the ACS during ground
controlled maneuvers.

f.   Propulsion

The spacecraft will use both a liquid bipropellent and a
Xenon Ion Propulsion System (XIPS). The liquid bipropellant
system is based on proven technology from earlier PanAmSat
programs and will be used for the liquid apogee engine and some
early maneuvers in transfer orbit and during deployments.   The
use of XIPS technology for long-term attitude control has already
been proven by the PAS-9 satellite and has been incorporated into
Galaxy VIII(I) satellite, and will also be used in other
spacecraft under construction by PanAmSat.

g.   Communication Payload

(i)   Antenna Subsystem

The PAS-8B satellite antenna subsystem contains two east-
west reflectors and one nadir reflector. Relative to the desired
polarization, the cross-polarization component of the receive and
transmit signals will be at least 30 dB over the required
coverage regions.

(ii) Communications Subsystem

The communications subsystem consists of two types of communications repeaters:

    (1) a Ku-Band repeater employing 105 watt TWTAs,

    (2) a Ku-Band repeater employing 140 watt TWTAs.

Subsystem components are selected to optimize performance in conjunction with ground terminals on customer premises.

Redundant wideband receivers will be connected directly to all receive antennas (a total of eight receivers). Each wideband receiver has been designed to have high sensitivity (good noise performance) and low crosstalk coefficients (good linearity characteristics). High sensitivity is required for detection and amplification of extremely low-level signals received by the satellite from the earth station transmitters. The low crosstalk coefficients are necessary since many separate signals pass through the wide-Band receivers prior to channelization by the narrow bandpass filters. A highly linear receiver is necessary in order to minimize coupling of interference among these signals in the receiver.

The wide-Band receiver will consist of a low noise amplifier followed by a downconverter that will translate the input frequencies to the satellite transmit frequencies without

frequency inversion. Variations in net translation frequency over one day will not exceed a total of one part in 10^6, including eclipse effects. Following the downconverter will be a medium-level amplifier that will amplify the translated signals sufficiently to drive the channel amplifier in each transponder.

Following the input filters is a bank of redundancy switches and combining hardware which form the channel amplifier redundancy combining network. Next, the commandable step attenuators provide ground commandable attenuation of up to 30.0 dB in 1 dB increments. Finally, the high powered amplifiers (HPAs) output the signals to a redundancy combining network followed by the output multiplexer filters.

Spurious emissions that are beyond the usable bandwidth of each transponder in Ku-Band are attenuated by a combination of input and output multiplexer filters. Out-of-band emissions beyond the Ku-Band transmission band, including harmonics, are attenuated by a combination of the output multiplexer filter and low pass filtering.

h.   **Satellite Useful Lifetime**

The design lifetime of the satellite is 15 years. This has been determined by a conservative evaluation of the effect of the synchronous orbit environment on the solar array, the effect of the charge-discharge cycling on the life of the battery, and the wearout of the amplifiers. The mass allocation of propellant for

spacecraft stationkeeping is 15 years. To enhance the probability of survival, spacecraft equipment will be redundant wherever possible. Materials and processes will be selected so that aging or wearing effects will not adversely affect spacecraft performance over the estimated life. The following paragraphs discuss dominant lifetime factors.

(i) Fuel

A conservative mission analysis indicates a 15 year lifetime. The mission has not yet been optimized since the exact sequence of maneuvers will be determined after the actual selection of the launch vehicle. Any remaining spacecraft weight margin can be converted to fuel life.

(ii) Battery

Life testing to date indicates that a longevity of 15 years can be achieved. In order to ensure this longevity, the spacecraft design incorporates the following required provisions: a maximum depth of discharge of 80% (actual planned is 78.6%), a C/20 charge rate at end of life, thermal control during all phases, and proper selection of battery cell components.

(iii) Solar Array

Predictions concerning the useful life of the solar array are backed by decades of the manufacturer's (Hughes Space and

Communications) experience in predicting and measuring in-orbit solar panel performance. These predictions are based on conservative assumptions concerning the radiation environment.

(iv) Electronics

All critical electronics units and components are redundant. There is a 4 for 2 receiver redundancy employed for each communications payload and at least 15 for 12 redundancy rings employed for the power amplifier chains. For other electronic units a minimum of two-for-one redundancy is employed. The electrical design follows well-established criteria regarding parts selection, testing and design, among others.

(v) Non-Electronic

Full redundancy has been employed for non-electronic components wherever possible.

i. Satellite Stationkeeping

Inclination of the satellite orbit will be maintained to ±0.05 degrees or less, and the satellite will be maintained to within ±0.05 degrees of the nominal longitude position. Attitude of the satellite will be maintained to an accuracy consistent with the achievement of the specified communications performance, after taking into account all error sources (e.g., attitude

perturbations, thermal distortions, misalignments, orbital
tolerances, and thruster perturbations).

In addition to the propellant required for operational
attitude and orbital control, extra propellant will be
incorporated to provide correction of the initial orbit, initial
attitude acquisition, and one orbital repositioning maneuver at a
drift rate of 1 degree per day. Sufficient propellant will be
included in the satellite to permit a 15-year operational life.

j.   Telemetry, Command and Ranging ("TC&R")

The telemetry, command and ranging ("TC&R") subsystem will
perform the monitoring and command functions necessary for
spacecraft control.

(i)   Telemetry

The telemetry system will have two identical links
consisting of two encoders that modulate either of two
transmitters via a cross-strap switch. Data pertaining to unit
status, spacecraft attitude, and spacecraft performance will be
transmitted continuously for spacecraft management and control.
The telemetry transmitter will also serve as the downlink
transmitter for ranging tones and command verification. The
primary telemetry data mode will be PCM. For normal on-station
operation, the telemetry transmitters will be routed to the
transmit feeds of the communications antenna.

In transfer orbit, each telemetry transmitter will drive the bicone antenna to provide adequate telemetry coverage. Selection of this high level mode, which may also be used for emergency backup on station, will be by ground command.

(ii) Command

The command system will control spacecraft operation through all phases of the mission by receiving and decoding commands to the spacecraft. Additionally, it will serve as the uplink receiver for ranging signals. The command signals will be fed through a filter diplexer into a redundant pair of command receivers. The composite signal of the receivers' total output will drive a pair of redundant decoders. The decoders will provide command outputs for all satellite functions. The bicone antenna will be used in transfer orbit for command and ranging and the pipe antenna will be used on-station.

(iii)   TC&R Performance Characteristics

A telemetry and command summary is given in Table 5. The satellite system requires a command receiver input nominal power of -135 dBW for command execution. With a nominal ground station EIRP of 83.5 dBW, the command threshold requirements are met with margin through the omni and reflector antennas, respectively. See Table 6 for the command link budget. The telemetry link budget for on-station operation is given in Table 7.

Table 5. TT&C System Parameters

Parameter	Spacecraft Antenna	
	Bicone	Pipe
Command frequency	13999.5 MHz	13751.5 MHz
Earth station command EIRP, (typical)	83.5 Dbw	83.5 dBW
Command carrier modulation	FM	FM
Telemetry frequency	11696, 11697 MHz	11699 MHz L/RHCP
Telemetry modulation	PM	PM
Telemetry EIRP (max)	0.0 dBW	0.0 dBW
On-station ranging accuracy	21 m	21 m

Table 6. Command Rf Link Budget

Parameter	Transfer Orbit	On-Station
Ground station, EIRP, dBW	83.5	83.5
Polarization loss, dB	-0.1	-0.1
Path loss, dB/m^2	-162.5	-162.5
Incident power, dBW/m^2	-79.0	-79.1
Isotropic area, dB-m^2	-44.4	-44.2
Antenna gain, 20% on omni, dBi	-0.6	30.6
RF losses to tracking command receiver, dB	-1.55	-10.0
Receiver input power, dBW	-125.5	-94.8
Receiver command threshold, dBW	-135	-135
Margin, command threshold, dB	9.5	32.2

Table 7. Telemetry Link Budget (On-Station)

Parameter	Value
Telemetry EIRP, min.Castle Rock, CO	15.9 dBW
Path loss	-162.5 dB/m^2
Isotropic area	-42.6 dBm^2
Atmospheric absorption (clear sky)	-0.2 dB
TT&C- station G/T	37.2 dB/K
Link C/T	-155.9 dBW/K
Link C/N$_0$	76.6 dB-Hz
Subcarrier modulation index	-5.0 dB
Subcarrier C/N$_0$	71.6 dB-Hz
Implementation Loss	-2.5 dB
Telemetry Eb/N$_0$ (bit rate = 4 kbps)	33.1 dB
Eb/N$_0$ required for 10^{-6} BER	11.0 dB
Margin	22.1 dB

k. System Reliability

(1) Satellite

The PAS-8B satellite will be designed for an operational and mission life of 15 years. Mission lifetime is determined primarily by the amount of stationkeeping propellant that can be loaded into the tanks within the allowable launch weight and by the wearout of the TWTAs. To ensure highly reliable performance, TWTA redundancy rings of at least 20 for 16 are provided.

Life and reliability will be maximized by using proven reliability concepts in equipment design. All subsystems and units have a minimum design life of 15 years; standby redundancy is used in the attitude control subsystem and in the communications receivers, and active redundancy is used in the power subsystem. All avoidable single-point failure modes will be eliminated. All components and subsystems will be flight-qualified, and all components will be derated in accordance with design guidelines.

(2) Eclipse Conditions

Eclipse conditions occur when a satellite passes through the earth's shadow. Satellite outages during eclipse conditions are avoided by providing each satellite with sufficient on-board battery capacity to power all required spacecraft and communications payload functions. The battery capacity will be

more than adequate to power all amplifiers during eclipses throughout the mission life.

(3) Sun Outages

During predictable twice-yearly periods of approximately eight days, the sun briefly transits the field of view of an earth station pointing at a geostationary satellite. The rise in thermal noise in the earth station receivers caused by the sun's radiation disrupts satellite reception (i.e., causes sun outage). Such disruption of satellite reception is predictable and is well understood by satellite users.

Item E. Performance Requirements and Operational Characteristics

PAS-8B is designed to be a single purpose communications satellite. Its purpose is to provide DTH television service in Latin America. It will accomplish this task using digitally multiplexed wideband carriers uplinked from widely spaced transmit stations, controlled by PanAmSat's customers.

The characteristics and associated link analyses for this service are presented in Tables 9a and 9b for the Latin Beam, and 10a and 10b for the Brazil Beam. These link budgets demonstrate that PAS-8B will allow program providers to meet their respective performance objectives while maintaining sufficient link margin.

SATELLITE DATA	Satellite : PAS-6 Location: 43.0 deg W Lon Uplink Beam: LATIN_Ku_V Dnlink Beam: NTSC_Ku_H Uplink POL: V, Dnlink POL: H, EIRP, beam center: 52.3 dBW G/T:.4 dB/K, SFD:-83.4 dBW/m2 Dnlink EIRP: 50.5 dBW
TRANSPONDER DATA	Trans Bandwidth :36.0 MHz Trans Type: TWTA Uplink Frequency:12.972 GHz Dnlink Freq: 10.922 GHz Aggregate IBO : 0.0 dB Aggregate OBO: 0.0 dB
CARRIER DATA	Type: TV/PSK/MCPC, Info Rate: 34559 kbps, Mod: QPSK, R2/3 BWo: 36000kHz, BWa: 36000kHz, C/Nnom: 5.8dB, C/Nmin: 5.8dB

	LINK BUDGET		CLR SKY	UP FADE	DN FADE
UPLINK PERFORMANCE	Earth Station EIRP	(dBW)	79.4	79.4	79.4
	- Uplink Path Loss, clear sky	(dB)	-206.6	-206.6	-206.6
	- Uplink Rain Attenuation	(dB)	0.0	-8.6	0.0
	+ Satellite G/T	(dB/K)	.4	.4	.4
	- Boltzman's Constant	(dBW/K-Hz)	228.6	228.6	228.6
	- Carrier Noise Bandwidth	(dB-Hz)	-75.6	-75.6	-75.6
	C/N Uplink	(dB)	26.3	17.6	26.3
DOWNLINK PERFORMANCE	Satellite Saturation EIRP	(dBW)	50.5	50.5	50.5
	- Carrier Output Backoff	(dB)	0.0	-3.5	0.0
	Downlink EIRP per carrier	(dB)	50.5	47.0	50.5
	- Dnlink Path Loss, clear sky	(dB)	-205.2	-205.2	-205.2
	- Dnlink Rain Degradation	(dB)	0.0	0.0	-4.4
	- Antenna Pointing Error	(dB)	-.5	-.5	-.5
	+ Earth Station G/T, clear sky	(dB/K)	13.5	13.5	13.5
	- Boltzman's Constant	(dBW/K-Hz)	228.6	228.6	228.6
	- Carrier Noise Bandwidth	(dB-Hz)	-75.6	-75.6	-75.6
	C/N Dnlink	(dB)	11.4	7.8	7.0
COMPOSITE PERFORMANCE	C/N Uplink	(dB)	26.3	17.6	26.3
	C/N Dnlink	(dB)	11.4	7.8	7.0
	C/I Uplink Co-channel	(dB)	27.0	18.4	27.0
	C/I Dnlink Co-Channel	(dB)	27.0	23.5	27.0
	C/I Uplink Adj. Sat. (SAT 1)	(dB)	34.2	25.6	34.2
	C/I Dnlink Adj. Sat. (SAT 1)	(dB)	29.8	26.2	29.8
	C/I Uplink Adj. Sat. (SAT 2)	(dB)	36.8	28.1	36.8
	C/I Dnlink Adj. Sat. (SAT 2)	(dB)	32.3	28.8	32.3
	C/(N+I) COMPOSITE	(dB)	10.9	6.8	6.8
	- Required System Margin	(dB)	-1.0	-1.0	-1.0
	Net C/(N+I) COMPOSITE	(dB)	9.9	5.8	5.8
	- Minimum Required C/N	(dB)	-5.8	-5.8	-5.8
	Excess Link Margin	(dB)	4.1	0.0	0.0

TRANSPONDER UTILIZATION	% BW/CARR: 100.00, % PWR/CARR: 100.00, Max No. Carriers: 1.0 Downlink EIRP per carrier toward beam center: 52.3 dBW
TRANSMIT EARTH STA.	Loc: MEXICOCITY_MEX ID:K6.1 AZ: 102.5 Elev: 23.7 EIRP per carrier: 79.4 dBW, Carrier Pwr: 196.6 watts
RECEIVE E.S.	Loc: -3_dB_Gain_Contour ID:K0.60_DTH AZ: 0.0 Elev: 20.0
INTERFERENCE INFORMATION	Uplink Pwr Den: -52.6 dBW/Hz, Dnlink EIRP Den: -23.3 dBW/Hz Max Dnlink PFD: -150.2 dB(W/m2/4kHz) @ Beam Center
LINK AVAILABILITY	Uplink: Zone M , Dnlink: Zone K* Uplink: 99.96 %, Dnlink: 99.71 %, Composite Link: 99.67 %
AP/4 INFO.	Gamma = -21.5 dB, T = 154.2 K, Gamma/T = -43.4 dB

LOSS DUE TO ADJ. SAT. INTERFERENCE: Sat1 =0.08dB, Sat2 =0.04dB

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                        TABLE 9b- LATIN BEAM DATA INPUT
                               [ Input Data ]

---------------------------------- SATELLITE ----------------------------------

Satellite Name  : PAS-6            Location (deg W): 43.0 deg W
Uplink Beam     : LATIN_Ku_V       Dnlink Beam    : NTSC_Ku_H
Trans. BW  (MHz): 36.0 MHz         Trans. Type    : TWTA
Uplink Pol.     : V                Dnlink Pol.    : H
Uplink Chan.    : 18               Dnlink Chan.   : 18
Uplink Frequency    (GHz): 12.972  Dnlink Frequency    (GHz): 10.922
G/T, beam center    (dB/K): 2.0    EIRP, beam center    (dBW): 52.3
G/T, beam edge      (dB/K): -1.0   EIRP, beam edge      (dBW): 49.0
G/T, toward Tx ES   (dB/K): .4     EIRP, toward Rx ES   (dBW): 50.5
SFD, beam edge    (dBW/m2): -82
SFD, toward Tx ES (dBW/m2): -83.4


------------------------- OPERATING CONDITIONS --------------------------------

Attenuator Setting (dB): 15        Nominal Uplink Co-Chan C/I (dB): 27.0
Input Backoff      (dB): 0         Nominal Dnlink Co-Chan C/I (dB): 27.0
Output Backoff     (dB): *         Minimum Uplink Rain Margin (dB):  5.0
(C/Im) - Nominal   (dB): *         Actual   Uplink Rain Margin (dB):  8.6
Min. System Margin (dB): 1.0       Uplink Power Control Margin(dB):  .0
Max No Carriers / Trans: 1         Minimum Dnlink Rain Margin (dB):  4.5
                                   Actual   Dnlink Rain Margin (dB):  4.4
                                   Dnlink Pointing Error      (dB):  0.5


-- ADJACENT SATELLITE INTERFERENCE ----- Sat. No. 1 -------- Sat. No. 2 -----

Interfering Satellite Name        :     PAS-1              I-806
Interfering Satellite Location(deg W):   45               40.5
Uplink Interference    (dB or dBW/Hz):  -50.0             -50.0
Uplink Polarization Advantage    (dB):  N/A               N/A
Downlink Interference  (dB or dBW/Hz):  -50.0             -50.0
Downlink Polarization Advantage  (dB):  N/A               N/A


---------------------------- CARRIER PARAMETERS -------------------------------

Modem Type    : TV/PSK/MCPC        C/N         (clear sky, dB): 5.8
Modulation    : QPSK               Eb/No       (clear sky, dB): 6.0
Code Rate     : R2/3               C/N    (rain conditions, dB): 5.8
Info Rate (kbps): 34559            Eb/No  (rain conditions, dB): 6.0
Occupied Bandwidth  (kHz): 36000
Allocated Bandwidth (kHz): 36000

------ Transmit Earth Station ------     ------- Receive Earth Station -------

Location: MEXICOCITY_MEX           Location: -3_dB_Gain_Contour
Latitude      (deg N): 19.4        Latitude     (deg N): *
Longitude     (deg W): 99.2        Longitude    (deg W): *
Altitude         (m): 0            Altitude        (m): *
CCIR Rain Zone    : M              CCIR Rain Zone    : K*
E/S Type or Model No: K6.1         E/S Type or Model No: K0.60_DTH
E/S Manufacturer   :               E/S Manufacturer   :
E/S Diam.       (m): 6.1           E/S Diam.       (m): 0.60
E/S Freq (nom, GHz): 14.250        E/S Freq (nom, GHz): 11.075
E/S Tx Gain   (dBi): 57.3          E/S Gain  (nom, dBi): 35.0
ULPC Margin    (dB): .0            E/S Feed Loss   (dB): 0.15
                                   E/S Ant. Temp(deg K): 45
                                   E/S LNA Temp (deg K): 80
                                   E/S G/T  (nom, dB/K): *

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|--------------------------------------------------------------------------|
| SATELLITE  |Satellite  : PAS-6              Location: 43.0 deg W Lon  |
|    DATA    |Uplink Beam: LATIN_Ku_H      Dnlink Beam: BRAZIL_Ku_V    |
|            |Uplink POL: H,  Dnlink POL: V,  EIRP, beam center: 53.2 dBW |
|            |G/T:-1.8 dB/K,  SFD:-84.2 dBW/m2   Dnlink EIRP: 51.5 dBW   |
|--------------------------------------------------------------------------|
|TRANSPONDER |Trans Bandwidth :36.0 MHz       Trans Type: TWTA          |
|   DATA     |Uplink Frequency:12.932 GHz    Dnlink Freq: 10.882 GHz    |
|            |Aggregate IBO  : 0.0 dB    Aggregate OBO: 0.0 dB          |
|--------------------------------------------------------------------------|
|  CARRIER   |Type: TV/PSK/MCPC, Info Rate: 34559 kbps, Mod: QPSK,  R2/3 |
|   DATA     |BWo: 36000kHz, BWa: 36000kHz, C/Nnom: 5.8dB,  C/Nmin: 5.8dB|
|--------------------------------------------------------------------------|
```

	LINK BUDGET		CLR SKY	UP FADE	DN FADE
	Earth Station EIRP	(dBW)	78.0	78.0	78.0
	- Uplink Path Loss, clear sky	(dB)	-205.9	-205.9	-205.9
	- Uplink Rain Attenuation	(dB)	0.0	-4.3	0.0
UPLINK	+ Satellite G/T	(dB/K)	-1.8	-1.8	-1.8
PERFORMANCE	- Boltzman's Constant	(dBW/K-Hz)	228.6	228.6	228.6
	- Carrier Noise Bandwidth	(dB-Hz)	-75.6	-75.6	-75.6
	C/N Uplink	(dB)	23.3	19.1	23.3
	Satellite Saturation EIRP	(dBW)	51.5	51.5	51.5
	- Carrier Output Backoff	(dB)	0.0	-1.1	0.0
	Downlink EIRP per carrier	(dB)	51.5	50.4	51.5
DOWNLINK	- Dnlink Path Loss, clear sky	(dB)	-205.1	-205.1	-205.1
PERFORMANCE	- Dnlink Rain Degradation	(dB)	0.0	0.0	-2.9
	- Antenna Pointing Error	(dB)	-.5	-.5	-.5
	+ Earth Station G/T, clear sky	(dB/K)	13.4	13.4	13.4
	- Boltzman's Constant	(dBW/K-Hz)	228.6	228.6	228.6
	- Carrier Noise Bandwidth	(dB-Hz)	-75.6	-75.6	-75.6
	C/N Dnlink	(dB)	12.4	11.3	9.4
	C/N Uplink	(dB)	23.3	19.1	23.3
	C/N Dnlink	(dB)	12.4	11.3	9.4
	C/I Uplink Co-channel	(dB)	27.0	22.7	27.0
	C/I Dnlink Co-Channel	(dB)	27.0	25.9	27.0
	C/I Uplink Adj. Sat. (SAT 1)	(dB)	30.6	26.3	30.6
	C/I Dnlink Adj. Sat. (SAT 1)	(dB)	10.7	9.6	10.7
	C/I Uplink Adj. Sat. (SAT 2)	(dB)	33.1	28.9	33.1
	C/I Dnlink Adj. Sat. (SAT 2)	(dB)	33.3	32.2	33.3
COMPOSITE					
PERFORMANCE	C/(N+I) COMPOSITE	(dB)	8.1	6.8	6.8
	- Required System Margin	(dB)	-1.0	-1.0	-1.0
	Net C/(N+I) COMPOSITE	(dB)	7.1	5.8	5.8
	- Minimum Required C/N	(dB)	-5.8	-5.8	-5.8
	Excess Link Margin	(dB)	1.3	0.0	0.0

```
|--------------------------------------------------------------------------|
|TRANSPONDER |% BW/CARR: 100.00, % PWR/CARR: 100.00, Max No. Carriers: 1.0|
|UTILIZATION |Downlink EIRP per carrier toward beam center: 53.2 dBW     |
|--------------------------------------------------------------------------|
|TRANSMIT    |Loc: RIODEJANEIRO_BRA   ID:K6.1        AZ: 0.5 Elev: 63.2  |
|EARTH STA.  |EIRP per carrier: 78.0 dBW,   Carrier Pwr: 141.8 watts     |
|--------------------------------------------------------------------------|
|RECEIVE E.S.|Loc: -2_dB_Gain_Contour ID:K0.60_DTH   AZ: 0.0 Elev: 20.0  |
|--------------------------------------------------------------------------|
|INTERFERENCE|Uplink Pwr Den: -54.0 dBW/Hz, Dnlink EIRP Den: -22.4 dBW/Hz |
|INFORMATION |Max Dnlink PFD: -149.3 dB(W/m2/4kHz) @ Beam Center         |
|--------------------------------------------------------------------------|
|LINK        |Uplink: Zone N ,  Dnlink: Zone K*                          |
|AVAILABILITY|Uplink: 99.76 %,  Dnlink: 99.45 %,  Composite Link: 99.2 % |
|--------------------------------------------------------------------------|
|AP/4 INFO.  |Gamma = -17.6 dB, T = 363.4 K, Gamma/T = -43.2 dB          |
|--------------------------------------------------------------------------|
|LOSS DUE TO ADJ. SAT. INTERFERENCE: Sat1 =3.54dB, Sat2 =0.03dB            |
|--------------------------------------------------------------------------|
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                    TABLE 10b- BRAZIL BEAM DATA INPUT
                            [ Input Data ]

------------------------------- SATELLITE --------------------------------

Satellite Name  : PAS-6           Location (deg W): 43.0 deg W
Uplink Beam     : LATIN_Ku_H      Dnlink Beam       : BRAZIL_Ku_V
Trans. BW  (MHz): 36.0 MHz        Trans. Type       : TWTA
Uplink Pol.    : H                Dnlink Pol.       : V
Uplink Chan.   : 5                Dnlink Chan.    : 5
Uplink Frequency     (GHz): 12.932  Dnlink Frequency    (GHz): 10.882
G/T, beam center    (dB/K): 2.0     EIRP, beam center    (dBW): 53.2
G/T, beam edge      (dB/K): -1.0    EIRP, beam edge      (dBW): 49.5
G/T, toward Tx ES   (dB/K): -1.8    EIRP, toward Rx ES   (dBW): 51.5
SFD, beam edge   (dBW/m2): -82
SFD, toward Tx ES (dBW/m2): -84.2


-------------------------- OPERATING CONDITIONS --------------------------

Attenuator Setting (dB): 15       Nominal Uplink Co-Chan C/I (dB): 27.0
Input Backoff       (dB): 0       Nominal Dnlink Co-Chan C/I (dB): 27.0
Output Backoff      (dB): *       Minimum Uplink Rain Margin (dB):  5.0
(C/Im) - Nominal    (dB): *       Actual   Uplink Rain Margin (dB):  4.3
Min. System Margin (dB): 1.0      Uplink Power Control Margin(dB):  .0
Max No Carriers / Trans: 1        Minimum Dnlink Rain Margin (dB):  4.5
                                  Actual   Dnlink Rain Margin (dB):  2.9
                                  Dnlink Pointing Error      (dB):  0.5


-- ADJACENT SATELLITE INTERFERENCE ----- Sat. No. 1 -------- Sat. No. 2 -----

Interfering Satellite Name          :      PAS-1            I-806
Interfering Satellite Location(deg W):      45              40.5
Uplink Interference     (dB or dBW/Hz):    -50.0            -50
Uplink Polarization Advantage    (dB):     N/A              N/A
Downlink Interference   (dB or dBW/Hz):    -30.0            -50
Downlink Polarization Advantage  (dB):     N/A              N/A


---------------------------- CARRIER PARAMETERS ----------------------------

Modem Type    : TV/PSK/MCPC       C/N          (clear sky, dB): 5.8
Modulation    : QPSK              Eb/No        (clear sky, dB): 6.0
Code Rate     : R2/3              C/N   (rain conditions, dB): 5.8
Info Rate (kbps): 34559           Eb/No (rain conditions, dB): 6.0
Occupied Bandwidth   (kHz): 36000
Allocated Bandwidth (kHz): 36000

------ Transmit Earth Station ------    ------- Receive Earth Station -------

Location: RIODEJANEIRO_BRA        Location: -2_dB_Gain_Contour
Latitude      (deg N): -22.9      Latitude    (deg N): *
Longitude     (deg W): 43.2       Longitude   (deg W): *
Altitude         (m): 0           Altitude       (m): *
CCIR Rain Zone    : N             CCIR Rain Zone    : K*
E/S Type or Model No: K6.1        E/S Type or Model No: K0.60_DTH
E/S Manufacturer   :              E/S Manufacturer   :
E/S Diam.       (m): 6.1          E/S Diam.      (m): 0.60
E/S Freq (nom, GHz): 14.250       E/S Freq  (nom, GHz): 11.075
E/S Tx Gain   (dBi): 57.3         E/S Gain  (nom, dBi): 35.0
ULPC Margin   (dB): .0            E/S Feed Loss   (dB): 0.15
                                  E/S Ant. Temp(deg K): 45
                                  E/S LNA Temp (deg K): 80
                                  E/S G/T  (nom, dB/K): *

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Item F.   Adjacent Satellite Interference

The interference levels generated between PAS-8B and adjacent satellite systems were evaluated during PanAmSat's consultation with Intelsat, the only adjacent satellite to PAS-8B other than PanAmSat's own PAS-2R and PAS-1R. Since neither PAS-2R nor PAS-1R use the same frequencies as PAS-8B, no interference will be observed. In the case of potential interference with Intelsat, a coordination for PAS-8 was successfully concluded in 1997. It is not expected that there will be any obstacle to a second successful coordination.

In summary, the interference analyses which have been conducted establish that the design of PAS-8B is in full compliance with the requirements of the Commission.

Item G.   Orbital Location

1.   Location   .

PanAmSat requests that it be assigned the orbital location at 43° WL for PAS-8B. As noted above, the 43°WL location is now occupied at both C- and Ku-Band by PanAmSat's PAS-2R satellite. PAS-8B would use frequencies not used by the PAS-2R satellite. The 43° WL location satisfies PAS-8B's requirements for optimizing coverage, elevation angles, and service availability, and ensures that the maximum operational, economic, and public interest

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benefits will be derived. Most importantly, the 43° WL location
guarantees that the present user of PAS-8 will not have to
reorient their base of installed antennas to continue receiving
the service for which they have contracted.

2. Orbital Arc Limitations

PAS-8B is intended to provide video services to satellite
users in South America. The 43° WL position affords reasonable
earth station elevation angles, which is important when serving
existing users as well as those who will be installing new
antennas, and requires no repointing of dishes currently aimed at
PAS-8B.

PanAmSat proposes to continue serving the PAS-8 customers in
South America from this orbital slot with PAS-8B. The
attractiveness of PAS-8B to this market would be severely
diminished if service to this area is not possible.

3.   Service Capabilities

Provided that an orbital assignment to 43° WL is made, all
Ku-Band transponders on PAS-8B will be capable of providing
commercial-grade service to the targeted service areas. The
description of transponders, antenna beams, and other technical
parameters are set forth in other portions of this Application.

Payment Transactions Detail Report

Date: 11/25/98

BY: FEE CONTROL NUMBER

Fee Control Number	Payor Name	Account Number	Received Date
9810308210288001	PANAMSAT LICENSEE CORPORATION	FCC2054380	10/29/98
	ONE PICKWICK PLAZA		
	GREENWICH CT 06830		

Payment Amount	Current Balance	Seq Num	Payment Type Code	Quantity	Callsign Other Id	Applicant Name	Applicant Zip	Bad Check	Detail Amount	Trans Code	Payment Type
$89,460.00	$89,460.00	1	BNY	1		PANAMSAT LICENSEE CORPORATION	06830		$89,460.00	1	PMT
Total	1								$89,460.00		